

**Amendments to the Claims:**

This listing of claims will replace all versions and listings of claims in the application:

**Listing of Claims:**

1. – 28. (Canceled)

29. (previously presented) A circulating fluidized bed boiler comprising:  
a fluidized bed containing solids fluidized by a fluidization gas, and  
an oxygen transport membrane being disposed in the fluidized bed, wherein the oxygen transport membrane extracts oxygen from pressurized air provided thereto and provides the oxygen to the fluidized bed.

30. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the fluidization gas is CO<sub>2</sub>.

31. (previously presented) The circulating fluidized bed boiler of claim 30, wherein the fluidization gas is recycled CO<sub>2</sub>.

32. (currently amended) The circulating fluidized bed boiler of claim 429, further includes a fluid line for providing a combined fluidization gas and oxygen from the fluidized bed to a firebox.

33. (currently amended) The circulating fluidized bed boiler of claim 429, further includes a fluid pressurizing device that pressurizes the air provided to the oxygen transport membrane.

34. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane is supported within the fluidized solids in the fluidized bed.

35. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane is supported above the fluidized solids in the fluidized bed.

36. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the fluidized bed is disposed within a firebox.

37. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the fluidized bed is open to the firebox for receiving descending solids in the firebox.

38. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the fluidized bed extends along a portion of an inner wall of the firebox.

39. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the fluidized bed is external to a firebox.

40. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane produces oxygen depleted air which is provided to a waste heat boiler.

41. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane includes long tubes supported by intermediate plates.

42. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane includes short tubes with intermediate chambers.

43. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane includes concentric tubes, an inner tube of which serves as a support for a tube of outer membrane.

44. (previously presented) The circulating fluidized bed boiler of claim 43, wherein a space is provided between the concentric tubes.

45. (previously presented) The circulating fluidized bed boiler of claim 44, wherein the air flows in counter-current in the space between the tubes.

46. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane is heated to a high an operating temperature of the oxygen transport membrane.

47. (currently amended) The circulating fluidized bed boiler of claim 429, wherein the oxygen transport membrane comprises a plurality of oxygen transport membranes.

48. (previously presented) The circulating fluidized bed boiler of claim 47, wherein the high temperature is approximately greater than 700 degrees Celsius.

49. (currently presented) A boiler comprising:

a fire box in which solid fuel is combusted in the presence of oxygen; and

an oxygen transport membrane being disposed in thermal communication with such that the firebox to provide provides sufficient heat for the oxygen transport membrane wherein the oxygen transport membrane extracts oxygen from pressurized air provided thereto and provides the oxygen to for combustion in the firebox.

50. (currently amended) The boiler of claim 449, further includes a fluid pressurizing device that pressurizes the air provided to the oxygen transport membrane.

51. (currently amended) The boiler of claim 449, wherein the oxygen transport membrane is disposed on the periphery of the lower portion of the firebox.

52. (currently amended) The boiler of claim 449, wherein the oxygen transport membrane is disposed on a hearth of the firebox.

53. (currently amended) The boiler of claim 449, wherein the oxygen transport membrane produces oxygen depleted air which is provided to a waste heat boiler.

54. (currently amended) The boiler of claim 449, wherein the oxygen transport membrane includes long tubes supported by intermediate plates.

55. (currently amended) The boiler of claim 149, wherein the oxygen transport membrane includes short tubes with intermediate chambers.

56. (currently amended) The boiler of claim 149, wherein the oxygen transport membrane includes concentric tubes, an inner tube of which serves as a support for a tube of outer membrane.

57. (currently amended) The boiler of claim 149, wherein the oxygen transport membrane comprises a plurality of oxygen transport membranes.

58. (currently amended) The boiler of claim 149, wherein the oxygen transport membrane is heated to a high an operating temperature of the oxygen transport membrane.